

NDE's ESPC Requirements

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SOFTWARE ENGINEERING REQUIREMENTS

SE1 Compliance With Federal Enterprise Architecture

Desired Outcome:

The ESPC will have an IT Architecture compliant with government standards and that meets NESDIS requirements.

Required Service:

The contractor shall develop an IT Enterprise Architecture (EA) that is consistent with "Table 1 Federal Enterprise Architecture (FEA)."

Performance Standard:

The IT Enterprise Architecture (EA) will be compliant with the OMB Federal Enterprise Architecture (FEA). The EA will also be compliant with guidance from the NESDIS CIO's Office. EA will include documentation in Table 1.

Monitoring Method:

Analysis of designs

SE2: Operational Environment Design

Desired Outcome:

Lower the cost and risks of **operating** the systems that will generate and distribute NPOESS-derived products to customers

Required Service:

Design Requirement A: Design an Operational Environment

The contractor shall design and provide a reliable cost estimate of an NDE product processing system (develop a set of diagrams and supporting text) with an open architecture, such that its capabilities can be executed by other satellite data processing applications and can easily be operated on other platforms.

Capabilities that must be specified in this design include, but are not limited to:

- Database management systems (DBMS)
- Work management and scheduling systems
- Libraries
- Object repositories
- Object repository content

- Shared data objects (i.e., lookup tables, ancillary data)
- Shared procedural objects (i.e., utilities, called-modules, subroutines, etc.)

Performance Standard:

Open Architecture: During the first year of the contract, prior to coding, the contractor shall develop a set of diagrams and supporting text that describes NDE product processing in the context of all NESDIS data processing missions.

Reusability: During the first year of the contract, prior to coding, the contractor shall provide a set of diagrams and supporting text that describes an NDE product processing system in which the maximum number of system elements are accessible by the greatest possible number of product processing applications.

Reliability: The NDE operational environment will be designed for a high degree of reliability- maintain full operational status 98% of the time over any 12 month period.

Performance: The NDE operational environment will be designed for optimal resource utilization

Security: The NDE operational environment will be designed for a high degrees of confidentiality, integrity, and availability

Monitoring Method:

Analysis of designs

SE3: Development Environments Design

Desired Outcome:

Lower the cost and risks of **developing, maintaining, and enhancing** the system's data processing and scientific capabilities

Required Service:

Design Requirement B: Design a Development Environment

Specify and provide a reliable cost estimate of a shared, scalable infrastructure for use by developers and maintainers of data processing functions and of scientific algorithms that replicates, to the greatest extent possible, the system described as fulfillment of Design Requirement A (above).

As well, the Development Environment Design will specify a suite of proven development life cycle **tools to enhance NESDIS capabilities** in performing developmental and software maintenance tasks. Technologies in this category are: CASE tools, modeling tools, 4th Generation Languages, Testing Tools, requirements tracking tools, etc..

Performance Standard:

Open Architecture: During the first year of the contract, prior to coding, the contractor shall develop a set of diagrams and supporting text that describes NDE development capabilities in the context of all NESDIS data processing missions.

Reusability: During the first year of the contract, prior to coding, the contractor shall provide a set of diagrams and supporting text that describes a developmental IT infrastructure in which developmental resources (tables, CASE tools, 4GLs, utilities, compilers, the maximum number of system elements can be accessed by environmental satellite product developers.

Performance: The NDE development environment will be designed for optimal resource utilization

Maintainability: To support the contractor selection process, the candidate provides a set of recommendations for the most appropriate development tools demonstrating that they are:

- ~ widely supported in the remote sensing software industry
- ~ the most likely to be known by future NESDIS support staff

Reliability: The NDE development environment will be designed for a high degree of reliability - accessible to no less than 100 developers 95% of the time over any 12 month period

Security: The NDE development environment will be designed for a high degrees of confidentiality, integrity, and availability

Partitioning: The NDE development environment will be designed to support segregated domains to support different levels of testing (e.g.; unit, string, etc.)

Monitoring Method:

Analysis of designs

SE4: System Test/Backup Environment Design

Desired Outcome:

Lower the cost and risks of transitioning system elements into operations

Required Service:

Design Requirement C: Design a System Test/Backup Environment

Specify and provide a reliable cost estimate of a segregated test capability that replicates, to the greatest extent possible, the system described as fulfillment of Design Requirement A (above). The System Test Environment must support the following:

- Provide a capability for products to be generated and distributed to customers throughout the NPP mission
- Provide a temporary backup capability in which NPOESS products can be generated and distributed to customers in the event of operational environment failure
- Evaluate candidate system elements for operational fitness, performing appropriate
 - Analysis of documentation in terms of conformity to Configuration Management Standards (tbd)
 - Parallel tests
 - Stress Tests
 - Regression Tests
- Cooperate with NESDIS algorithm developers to identify System Test procedures, standards, and the criteria to be applied in determining a system element's fitness for operational status
- Provide a reliable, easily accessible source of information to developers about the criteria that will be applied by the System Test team to determine a system element's fitness for operational status. This information will include, at a minimum: system test submission procedures, documentation requirements, test script requirements, test scenario requirements, and test data requirements.

Performance Standard:

Ease of Use, Efficiency, Manageability: During the first year of the contract, prior to coding, the contractor shall provide a set of diagrams, supporting text, and procedures that describe a System Test Environment to be administered and operated by a permanent team of no more than five IT professionals in such a way that all elements submitted to them for testing and review can be evaluated for operational fitness in less than five working days after submission by developers.

Monitoring Method:

Analysis of System Test Designs

SE5: Modular Design

Desired Outcome:

Ability to isolate, alter, and test the system functions

Required Service:

The contractor shall develop the data processing elements of the future system in such a way that algorithms are invoked as objects with hidden information.

Performance Standard:

Modularity: During the project, prior to coding, the contractor shall provide a set of diagrams and supporting text that describes how algorithms are to be invoked as objects

Monitoring Method:

Analysis of designs

SE6: Design for Security Certification

Desired Outcome:

ESPC IT Security documentation should be developed along with the system (see System Management Requirements G through J)

Required Service:

The contractor shall develop documentation needed for Information System Certification and Accreditation

Performance Standard:

Documentation is complete and high quality. Documentation includes IT Security Plan, Risk Assessment, Security Test and Evaluation Plan, and Contingency Plan.

Monitoring Method:

Analysis of designs

SE7: Conformance with Government Maturity Models

Desired Outcome:

ESPC should be built according to government standards and Maturity Models.

Required Service:

The contractor shall use government Maturity Models for Configuration Control of documentation, Information System components, EA, and IT Security.

Performance Standard:

CM, EA, and IT Security conform with accepted government Level 4 Maturity Models.

Monitoring Method:

Analysis of designs

SE8: Best Practices**Desired Outcome:**

Contractor will use IT Best Practices and preferred technologies to reduce cost and ease transition.

Required Service:

The contractor shall design and build the NDE Information System using NOAA IT Best Practices provided by NDE Program Manager.

Performance Standard:

Technical Reference Model is compared to NDE collection of NOAA Best Practices.

Monitoring Method:

Analysis of designs

SE9: Reuse**Desired Outcome:**

The use of existing hardware and software will reduce cost.

Required Service:

The contractor will use existing hardware and software where it is possible, practical, and approved by the government. Inventory will be provided to the contractor by OSDPD IT Lead.

Performance Standard:

Design documentation identifies existing hardware and software used.

Monitoring Method:

Analysis of designs

SE10: COTS**Desired Outcome:**

Vendor-supported COTS will be used to avoid additional development costs.

Required Service:

The contractor shall use Commercial-Off-the-Shelf (COTS) software packages where practical, possible, and approved by the government.

Performance Standard:

Design documentation identifies COTS used.

Monitoring Method:

Analysis of designs

SE11: Design for Measurability**Desired Outcome:**

Ability to make system management decisions on the basis of system-generated metrics

Required Service:

The contractor shall identify standard measures of automated system component performance that can be captured during run time and retrieved for analysis

Performance Standard:

Measurability: During the project, prior to coding, the contractor shall provide diagrams and supporting text describing:

~ numerical data elements of execution performance (time, volume, number of invocations, etc.)

~ how the performance metrics are to be stored and used for reporting

Monitoring Method:

Analysis of designs

SE12: Software Engineering Methodology

Desired Outcome:

Ability to effectively manage development of the system's data processing capabilities

Required Service:

Project Management Requirement:

The contractor shall plan and control the NDE project in a manner that is consistent with a widely accepted software engineering methodology.

Performance Standard:

Manageability: To support the selection process, the contractor provides:

~An example of how the methodology is to be used

~His experience using the methodology

During the project the contractor provides monthly status reports using tasks from the methodology, including

~ Base Plan

~ Status of Tasks

~ Proposed changes to the plan:

~ numerical data elements of execution performance (time, volume, number of invocations, etc.)

~ how the performance metrics are to be stored and used for reporting

Monitoring Method:

Analysis of designs

SE13: Latest Proven Software Development Technologies

(Note: SE13 was included in Section J of the ESPC RFP/SOW published in June 2005. It was accidentally omitted from an earlier version of the NDE Requirements accessed from this site.)

Desired Outcome:

Effectively maintain the system's data processing components with a pool of readily available software engineers.

Required Service:

The contractor shall develop the data processing elements of the future NDE system using the latest proven technologies (programming languages, CASE tools, object repositories, data base management systems, etc.) that are appropriate for remote sensing data processing.

Performance Standard:

Maintainability: As early as possible during the Design Project, the contractor shall provide a set of recommendations for the most appropriate development tools demonstrating that they are:

- ~ Widely supported in the remote sensing software industry
- ~ The most likely to be known by future NESDIS support staff

Monitoring Method:

Analysis of designs

SE14: Computer Assisted Software Engineering (CASE) Tools

(Note: SE14 was included in Section J of the ESPC RFP/SOW published in June 2005. It was accidentally omitted from an earlier version of the NDE Requirements accessed from this site.)

Desired Outcome:

Effectively manage maintenance and enhancements of the system's data processing capabilities.

Required Service:

The contractor shall develop the data processing elements of the future NDE system using tools that will support the ability to alter executable components without altering source code.

Performance Standard:

Maintainability: Prior to coding, the contractor shall develop a set of recommendations for the development tools (4th generation programming languages, integrated CASE tools, object repositories, data base management systems, etc.) that will promote, to the greatest extent possible, the ability to alter executable elements without altering source code.

Monitoring Method:

Analysis of designs

INFRASTRUCTURE REQUIREMENTS

NOTE: "Component" refers to hardware, equipment, and licensed software products (i.e., Operating Systems, DBMS, middleware, COTS or GOTS products, CASE tools, etc.) and is used by NDE as a general term in discussions of infrastructure.

"Element" refers to NOAA-developed system capabilities (e.g., the source code for algorithms, programs, utilities, control tables, called procedures, etc.) and is used by NDE as a general term in discussions of archiving and configuration management.

IF1: System Test / Backup Environment

Desired Outcome:

Establish an infrastructure for **System Testing and emergency backup** that is consistent with Software Engineering Requirement C

Required Service:

Implement key components of the **NDE System Test/Backup** capability to process and distribute data and products from NPP according to a schedule consistent with Table 2: Timetable of NDE Infrastructure Tasks

- ~ Acquire or lease all System Test/Backup infrastructure elements required: hardware, COTS software, telecommunications, middleware, etc.
- ~ Install and integrate all primary System Test/Backup infrastructure components
- ~ Operate and administer the System Test/Backup infrastructure
- ~ Execute all necessary upgrades to System Test/Backup infrastructure components in accordance with vendor changes and NESDIS standards
- ~ Manage multiple versions of source code and other reusable objects

Performance Standard:

Throughput: For NPP alone, 4TB/day

~**Quality:** System elements placed in the operational environment perform without degrading the performance of other operational elements.

~**Quality:** 95% of system elements placed in the operational environment perform for three cycles (i.e., orbital, daily, weekly, etc.) without failing or causing other system elements to fail or perform less effectively

~**Efficiency a:** System Test Environment to be administered and operated by a permanent team of no more than five IT professionals in such a way that all elements submitted to them for testing and review can be evaluated for operational fitness in less than five working days after submission by developers.

~**Efficiency b:** System elements and components that are placed in the operational environment can be executed immediately without failing or causing other system elements to fail or perform less effectively .

~ **Business Continuity:** In the event of an emergency failure of the operational environment, the System Test Environment will be able to deliver products to the

operational community within the same throughput and latency parameters as the operational system. (See Performance Standards for Operations above)
~ **Scalability:** Additional capacity (throughput, latency, performance)

Monitoring Method:

- ~ **Quality:** Analysis of System Performance logs
 - ~ **Efficiency:** Analysis of System Test activity reports
 - ~ **Business Continuity:** Analysis of System Performance logs
 - ~ **Scalability:** Analysis of upgrade activity logs
-

IF2: Operational Environment

Desired Outcome:

Establish a scalable infrastructure for **operational product generation and distribution**, beginning with NPP, that is consistent with Software Engineering Design Requirement A, in order to provide telecommunications, data management, storage, and processing capabilities to support the NPP satellite mission.

Required Service:

Implement the **NDE Operational capability** according to a schedule consistent with Table 2: Timetable of NDE Infrastructure Tasks:

- ~ Acquire or lease all operational infrastructure elements required: hardware, COTS software, telecommunications, middleware, etc.
- ~ Install and integrate all the necessary operational infrastructure components
- ~ Operate and administer the operational infrastructure
- ~ Execute all necessary upgrades to infrastructure components in accordance with vendor changes and NESDIS standards

Performance Standard:

~ Throughput:

For NPP alone, 4TB/day

For NPP and NPOESS C1, 8 TB/day

For NPOESS C1 and C2, 8 TB/day

For NPOESS C1, C2, and C3, 12 TB/day

- ~ **Latency:** products available to customers less than 5 minutes after final receipt of all necessary data elements (standard to be applied for 98% of all products)
- ~ **Scalability:** Additional capacity (throughput, latency, performance) can be created without redesign of the operational infrastructure
- ~ **Interoperability:** Able to receive data from IDPS in real time
- ~ **Interoperability:** Able to send/receive messages to/from the NPOESS Mission Management Center (MMC) in realtime.

~ **Interoperability:** Able to deliver (push) products to customer systems in the event that customers choose this method of delivery

Monitoring Method:

Throughput, Latency: ~ Analysis of System Test Logs generated no later than October 1 2008 (or 18 months prior to NPOESS C1 launch if launch date slips).

~ After NPP LEOP, NOAA inspection of Product Generation Control Logs

Scalability:

Interoperability: Analysis of System Performance Logs

IF3: Development Environments

Desired Outcome:

Establish an infrastructure for use by developers of NDE data processing capabilities and by developers of science algorithms (e.g., **development environment**) that is consistent with Software Engineering Requirement B

Required Service:

Implement key components of the **NDE Development capability** according to a schedule consistent with Table 2: Timetable of NDE Infrastructure Tasks

- ~ Acquire or lease all developmental infrastructure elements required: hardware, COTS software, telecommunications, middleware, etc
- ~ Install and integrate primary development infrastructure components
- ~ Operate and administer the developmental infrastructure
- ~ Execute all necessary upgrades to development infrastructure components in accordance with vendor changes and NESDIS standards
- ~ Manage multiple versions of source code and other reusable objects

Performance Standard:

- ~ **Interoperability:** Ability to send/receive data and messages with the NPOESS ground system, particularly the IDPS, is demonstrated by December 2006
- ~ **Efficiency:** Developers believe that the environment supports them without interfering with their creativity or productivity
- ~ **Capacity:** Algorithms and system utilities can be tested using high volumes (tbd) of stored historical, experimental, and test data
- ~ **Reliability:** Historical datasets are stored and administered in order to guarantee their integrity and currency
- ~ **Reusability:** Developers install system elements (i.e., data, procedures, objects) into their programs that have been extracted from controlled "libraries" to create functionality
- ~ **Reusability:** Developers perform tests using previously developed elements (test scripts, test data, test scenarios, etc.)
- ~ **Scalability:** Additional capacity (throughput, latency, performance) can be created without redesign of the Development infrastructure

Monitoring Method:

~ **Efficiency:** Biannual Evaluation of Developer Satisfaction Surveys and monthly analysis of Trouble Tickets and Service Requests received from developers.

~ **Capacity:** Tests using historical data execute in no more than 50% of the clock time of an equivalent product generation execution in the operational environment

~ **Reusability:** Design Inspections, Code Inspections

SYSTEM MANAGEMENT REQUIREMENTS

NOTE: Unless specifically named as applicable to one or two environments (Operations, Development, or System Test/Backup) all System Management requirements are applicable to each of the 3 environments described in Software Engineering Design Requirements A, B, and C.

SM1: Improving Capabilities

Desired Outcome:

The system management processes will improve continuously

Required Service:

System Management Requirement A:

The contractor's system management capabilities shall be evaluated in terms of Software Engineering Institute's (SEI) Capability Maturity Model (CMM)

Performance Standard:

Software Management Capability: Certified CMM Level 2 during proposal evaluation, Certified CMM Level 3 three years after contract award and thereafter

Monitoring Method:

Software Management Capability:

Evaluation by an independent agency every three years.

SM2: Scheduling Tasks

Desired Outcome:

Work, both automated and manual, is performed according to a predetermined schedule.

Required Service:

System Management Requirement B:
The contractor shall schedule tasks

Performance Standard:

Completeness: Automated tasks associated with temporal events will be initiated by an automated scheduler.

Completeness: Manual tasks necessary to achieve NESDIS objectives are planned

Reliability: 99% of scheduled tasks will execute on time

Monitoring Method:

Completeness: NESDIS inspection of scheduler reports

Reliability: NESDIS inspection of Performance Logs

SM3: Prioritizing Tasks**Desired Outcome:**

NOAA priorities and processing dependencies influence the level of effort and sequence of tasks

Required Service:

System Management Requirement C: The contractor shall prioritize tasks

Performance Standard:

Completeness: All predecessor and successor relationships of system elements are documented

Quality (Measurability): The relative importance of tasks to each other is represented numerically.

Quality: Necessary predecessor tasks provide input and/or control information to dependent tasks

Monitoring Method:

Quality: NESDIS inspection of design documents and performance logs

SM4: Assigning Tasks**Desired Outcome:**

Contractor staff is assigned to perform tasks

Required Service:

System Management Requirement D: The contractor shall allocate resources to perform planned tasks

Performance Standard:

Quality : Project Plans identify separate tasks and their associated schedule, resource, and effort estimate

Monitoring Method:

Quality: NESDIS inspection of project plans

SM5: System Performance Monitoring

Desired Outcome:

The state of the system is always known.

Required Service:

System Management Requirement E: The contractor shall monitor performance

Performance Standard:

Quality: The contractor is able to report on the status of all scheduled tasks at all times

Monitoring Method:

Quality: NESDIS analysis of system performance logs

Quality: NESDIS analysis of project management status reports

SM6: System Performance Reporting

Desired Outcome:

The contractor reports on the cost and schedule status of tasks

Required Service:

System Management Requirement F: The contractor shall report system performance

Performance Standard:

Quality: The contractor produces reports on the status of all scheduled tasks

Monitoring Method:

Quality: NESDIS analysis of system performance logs

Quality: NESDIS analysis of project management status reports

SM7: Backup

Desired Outcome:

The NDE System can recover from unexpected failures

Required Service:

System Management Requirement G: The contractor shall develop and implement automated backup procedures for all NDE data and procedures for each of the 3 environments: Operations, Development, System Test

Performance Standard:

Data Currency: The NDE system stores all data necessary to commence normal operations of each of the 3 environments using data that was current at the time a system failure took place

Data Integrity: Backed-up versions of NDE operational, developmental, and System Test data are identical to versions of the data in use at the time of the backup

Conformance to Standards: NDE's automated backup of data and procedures conforms to NESDIS standards

User Need: The priority of system recovery procedures are based on user community (i.e., end users, developers, non-subscribers, etc.) needs as determined by management decision

Monitoring Method:

Data Currency: Analysis of System Test logs for recovery and restart scenarios of each of the 3 environments

Data Integrity: Analysis of System Test logs of automated data backup of each of the 3 environments

Conformance to Standards: Comparison of the written descriptions of NDE's automated backup capabilities with NESDIS standards

SM8: Restart**Desired Outcome:**

The NDE System can recover from unexpected failures

Required Service:

System Management Requirement H: The contractor shall develop and implement procedures to restart each of the 3 NDE environments (Operations, Development, System Test) using backed-up, current data

Performance Standard:

Data Currency: Each of the restarted NDE systems commence normal operations using data that was current at the time a system failure took place

Reliability: After restart, automated procedures in each of the 3 environments perform their functions as they did prior to system failure

Conformance to Standards: NDE's automated recovery procedures conform to NESDIS standards

User Need: The priority of system recovery procedures are based on user community (i.e., end users, developers, non-subscribers, etc.) needs as determined by management decision

Recovery Time: Each of the NDE systems can be restarted to satisfy a Recovery Time Objectives (RTO) tbd by NESDIS Management

Monitoring Method:

Data Currency: Analysis of System Test logs for recovery and restart scenarios of each of the 3 environments

Reliability: Analysis of System Test logs of automated recovery of each of the 3 environments

Conformance to Standards: Comparison of the written descriptions of NDE's automated backup capabilities with NESDIS standards

SM9: Secure Data Integrity**Desired Outcome:**

NDE data assets are valid

Required Service:

System Management Requirement I: The contractor shall implement secure procedures and technologies to protect the integrity of NDE's data in the event of:

- ~ human errors when data is entered,
- ~ errors that occur when data is transmitted from one computer to another,
- ~ software bugs or viruses,
- ~ hardware malfunctions, such as disk crashes, and
- ~ natural disasters, such as fires and floods

Performance Standard:**Data Integrity:**

Conformance to NESDIS, DOC, and other relevant government security standards

Monitoring Method:

Data Integrity: Analysis of System Test logs of scenarios that threatened data validity

SM10: Secure Data Confidentiality**Desired Outcome:**

NDE data assets are confidential

Required Service:

System Management Requirement J: The contractor shall implement procedures and technologies to ensure that NDE information is accessible only to those authorized to have access

Performance Standard:

Confidentiality: Conformance to NESDIS, DOC, and other relevant government security standards

Monitoring Method:

Confidentiality: Analysis of System Test logs of scenarios that threatened NDE confidentiality

SM11: Secure Data Availability

Desired Outcome:

NDE data assets are available

Required Service:

System Management Requirement J: The contractor shall implement procedures and technologies to ensure that NDE information is accessible only to those authorized to have access

Performance Standard:

Availability: see System Management Requirement H (above)

Monitoring Method:

Availability: see System Operations Requirement G & H (above)

SM12: Open Mode

Desired Outcome:

The Operational system operates in an Open Mode

Required Service:

System Operations Requirement A: The contractor shall develop and implement procedures to make data available to all users in Open Mode.

Performance Standard:

~ Completeness & Accuracy: In Open mode, all data is available to all customers and developers

Monitoring Method:

~ Completeness & Accuracy: Analysis of System Performance logs

SM13: Distribution During Data Denial Mode

Desired Outcome:

The Operational system operates in a Data Denial mode

Required Service:

System Operations Requirement B: The contractor shall develop and implement procedures to make data available only to authorized users in Data Denial mode

Performance Standard:

~ Completeness & Accuracy: In Data Denial mode, data is available only to authorized customers and developers

Monitoring Method:

~ Completeness & Accuracy: Analysis of System Performance logs

SM14: Data Denial Notification

Desired Outcome:

The Operational system operates in a Data Denial mode

Required Service:

System Operations Requirement C: The contractor shall develop and implement procedures to notify all authorized customers when the system is in Data Denial mode

Performance Standard:

~ Completeness & Accuracy: In Data Denial mode, notifications are sent to authorized customers and developers

Monitoring Method:

~ Completeness & Accuracy: Analysis of System Performance logs

SM15: Consultation in Degraded Operations Mode

Desired Outcome:

The Operational system operates in a Degraded Operations mode

Required Service:

System Operations Requirement D: The contractor shall develop and implement procedures to consult with the government (e.g., will NCEP models be

adversely affected?) in order to determine whether to alter distribution of products when NPOESS is in a Degraded Operations mode.

Performance Standard:

~ Quality: In NPOESS Degraded Operations mode, products are distributed only if they will have no adverse affect on customer observations

Monitoring Method:

~ Completeness & Accuracy: : Analysis of communication logs between ESPC and NPOESS

~ Completeness & Accuracy: : Analysis of System Performance logs

SM16: Degraded Operations

Desired Outcome:

The Operational system operates in a Degraded Operations mode

Required Service:

System Operations Requirement E: The contractor shall develop and implement procedures to consult with the government and notify affected customers when NPOESS is in a Degraded Operations mode.

Performance Standard:

~ Completeness: In Open mode, all data is available to all users

~ Quality: In NPOESS Degraded Operations mode, customers are notified of operational impacts of affected products

Monitoring Method:

~ Completeness: Analysis of communication logs between ESPC and NPOESS, System Performance logs, and Trouble Tickets originating from affected customers

SM17: Quality Control of NDE Input

Desired Outcome:

Operational products are delivered to customers only if they conform to predetermined standards of quality

Required Service:

System Operations Requirement F: The contractor shall develop and implement procedures to control operational product quality by identifying deficiencies of ingested data or metadata received from the IDPS

Performance Standard:

Quality: Recognition and reporting of all Quality Flags received from IDPS

Quality: Detection of xDR and metadata attributes that are below agreed NDE thresholds of acceptability

Monitoring Method:

- ~ Analysis of Performance Logs
 - ~ Analysis of Trouble Tickets of product problems
 - ~ Analysis of Service Requests for product quality improvement
-

SM18: Quality Control of NDE Output**Desired Outcome:**

Operational products are delivered to customers only if they conform to predetermined standards of quality

Required Service:

System Operations Requirement G: The contractor shall develop and implement procedures to control operational product quality by supporting any quality control of NDE output (e.g., products or metadata) performed within each of the NDE product processing applications.

Performance Standard:

Standards: Maintenance of information concerning actions to be taken in the event of quality deficiencies

Quality: Invocation of all previously agreed procedures and notifications to address the consequences of low quality (containing attributes below agreed NDE thresholds of acceptability) xDRs, NOAA-unique products, NDE tailored products, and metadata.

Monitoring Method:

- ~ Analysis of Performance Logs
 - ~ Analysis of Trouble Tickets of product problems
 - ~ Analysis of Service Requests for product quality improvement
-

SM19: User Notification**Desired Outcome:**

Customers (including developers) are provided with information about their orders and system conditions of concern to them.

Required Service:

The contractor shall develop and implement procedures to support notification of users

Performance Standard:

Customer Satisfaction: Customers are satisfied with their ability to obtain information about the status of their orders

Monitoring Method:

Customer Satisfaction: Analysis of Customer Satisfaction Surveys.

SM20: Service Requests to NPOESS**Desired Outcome:**

NESDIS requests changes to NPOESS products and services through the NPOESS Change Control Board.

Required Service:

The contractor shall develop and implement procedures to submit Service Requests to NPOESS (both the MMC and the IPO CCB), to log and track these Service Requests, and to log and track all NPOESS responses

Performance Standard:

Customer Satisfaction: Customers are satisfied with NDE procedures to request product changes

Monitoring Method:

Customer Satisfaction: Analysis of Service Requests, tracking logs, and Customer Satisfaction Surveys.

SM21: Correspondence**Desired Outcome:**

All correspondence regarding the ESPC is kept

Required Service:

The contractor shall develop and implement procedures to log and track all correspondence

Performance Standard:

Completeness: All electronic and written correspondence is retained and accessible for inspection.

Monitoring Method:

Completeness: Inspection of correspondence by date, author, and subject

SM22: Log And Track Requests For NDE Service

Desired Outcome:

Requests for changes are saved

Required Service:

The contractor shall develop and implement procedures to log and track Requests for NDE Service, including product enhancement requests, and NDE responses

Performance Standard:

Customer Satisfaction: Customers are satisfied with NDE procedures to request product changes

Monitoring Method:

Customer Satisfaction: Analysis of Service Requests and Customer Satisfaction Surveys.

SM23: Log Performance Data

Desired Outcome:

Information about system performance will be kept

Required Service:

The contractor shall develop and implement procedures to log performance data

Performance Standard:

Completeness: Statistics of execution performance (time, volume, number of invocations, etc.) are logged and maintained for analysis (see Software Engineering Design Requirement D)

Monitoring Method:

~ Analysis of System Performance Logs and Reports

SM24: Report Performance

Desired Outcome:

System performance reports are produced

Required Service:

The contractor shall develop and implement scheduled and on-demand procedures to report performance data

Performance Standard:

Completeness: Reports of system performance (time, volume, number of invocations, etc.) are generated on demand and according to a schedule

Monitoring Method:

~ Analysis of System Performance Logs and Reports

DATA RETENTION & ARCHIVE REQUIREMENTS

NOTE: Unless specifically named as applicable to one or two environments (Operations, Development, or System Test/Backup) all Data Retention & Archive requirements are applicable to each of the 3 environments described in Software Engineering Design Requirements A, B, and C.

NOTE: "Element" refers to NOAA-developed system capabilities (e.g., the source code for algorithms, programs, utilities, control tables, called procedures, utilities, etc.) and is used by NDE as a general term in discussions of archiving and configuration management.

"Component" refers to hardware, equipment, and licensed software products (i.e., Operating Systems, DBMS, middleware, COTS or GOTS products, CASE tools, etc.) and is used by NDE as a general term when referring to the infrastructure.

DA1: Retain Products

Desired Outcome:

Data Retention: Recently generated products are available for additional processing

Required Service:

The contractor shall develop and implement procedures to retain NOAA-unique Products for 48 hours

Performance Standard:

~ **Quality** - Minimal (tbd) retrievals from CLASS of NOAA-unique products that are less than 48 hours old

Monitoring Method:

DA2: Management of System Assets

Desired Outcome:

Data assets will be managed at the system level in all three environments

Required Service:

The contractor shall provide resources and implement procedures to add, update, and delete shared data resources in a controlled manner according to agreed user (either developer, tester, or customer) needs in each of the three environments.

Performance Standard:

Data Integrity: Data resources (including test, historical, and experimental data and metadata) are maintained with a minimum of duplication.

Data Integrity: Data resources (including test, historical, and experimental data and metadata) are deleted after a reasonable (tbd) interval of disuse

Monitoring Method:

Data Integrity: Analysis of performance logs of system utilities routinely performed to detect duplication and eliminate wasted data storage space

DA3: Generate Products Again**Desired Outcome:**

Data Retention: Users, both customers and developers, can obtain the same operational product more than once within 48 hours.

Required Service:

The contractor shall develop and implement procedures to manage and retain data if requested by a user

Performance Standard:

~ **Completeness, Latency** - All requested products are retained for up to 48 hours

Monitoring Method:

Analysis of Service Requests for product retention

DA4: Retain System Elements Required For Product Tailoring**Desired Outcome:**

Archive: All system elements necessary for NDE operational product generation are archived

Required Service:

The contractor shall develop and implement procedures to deliver to NOAA's Long Term Archive (CLASS) all data and system elements required by NDE for processing tailored products or NOAA-unique products. These include, minimally:

- o Metadata
- o Ancillary data
- o Processes used to create products, including system configurations, software processes, and necessary parameters
- o TBD intermediate products per process

Performance Standard:

~ **Completeness** - Evidence of receipt by CLASS

Monitoring Method:

~ Inspection of CLASS receipts

DA5: Retain System Elements Required For Testing**Desired Outcome:**

Archive: All system elements necessary for NDE product generation in the development environment are archived.

Required Service:

The contractor shall develop and implement procedures to store and manage all data and system elements required by NDE developers for testing. These include, minimally:

- o Metadata
- o Ancillary data
- o Processes used to create products, including system configurations, software processes, and necessary parameters
- o TBD intermediate products per process

Performance Standard:

~ **Completeness** - Evidence of receipt by CLASS

Monitoring Method:

~ Inspection of CLASS receipts

DA6: NOAA-unique Archiving**Desired Outcome:**

Archive: All operational NOAA-unique products are archived.

Required Service:

The contractor shall develop and implement procedures to deliver all NOAA-unique products generated by the NDE system NOAA's Long Term Archive (CLASS)

Performance Standard:

~ **Completeness** - Evidence of receipt, by CLASS, of all NOAA-unique products generated by the NDE system

Monitoring Method:

~ Inspection of CLASS receipts

DA7: Catalog Information**Desired Outcome:**

Archive: A catalog of NDE's archived material is available

Required Service:

The contractor shall develop and implement procedures to provide catalog information for archived data

Performance Standard:

Completeness, Accuracy -The contractor shall provide catalog information for archived data

Monitoring Method:

~ Ability to retrieve any cataloged item from CLASS
~ Inspection of catalog

DA8: Retrieve Archived Data**Desired Outcome:**

Archive: Archived data is used by NDE product processing

Required Service:

The contractor shall develop and implement procedures to retrieve archived data

Performance Standard:

Reliability- The contractor retrieves archived data

Timeliness - The contractor will be capable of retrieving archived data as quickly as allowed by CLASS performance capabilities

Monitoring Method:

~ Observation

DA9: Process Archived Data**Desired Outcome:**

Archive: Archived data is used by NDE product processing

Required Service:

The contractor shall develop and implement procedures to process archived data

Performance Standard:

Timeliness, Quality - The contractor shall have the capability to process archived data

Monitoring Method:

Demonstration

DA10: Metadata Standards**Desired Outcome:**

Information about NDE's products and NPOESS observations shall be retained for future use.

Required Service:

The Contractor shall develop and implement procedures to conform to metadata standards

Performance Standard:

Completeness, Accuracy – The Contractor reports on violations of metadata standards (e.g., FGDC Content Standard for Digital Geospatial Metadata) .

Monitoring Method:

Inspection of metadata reports

DA11: Notification Of Data Anomalies**Desired Outcome:**

Users of archived NDE products will be provided with information about whether the data values are outside of agreed, standard ranges

Required Service:

The Contractor shall develop and implement procedures to provide notification of data anomalies of archive data to customers

Performance Standard:

~ Accuracy – The Contractor identifies all instances of anomalous data values
~ Timeliness, Customer Service – Prior to archiving, the Contractor links a

notification of anomalous data values to all instances of any product containing the detected anomaly

Monitoring Method:

- ~ Inspection of data quality logs
 - ~ Inspection of user notifications
-

DA12: Product Version Control

Desired Outcome:

NDE can replace products that it has previously archived with instances of the products in which anomalies have been repaired.

Required Service:

The Contractor shall develop and implement procedures to change archived products through version control

Performance Standard:

- ~ Conformance to Standards – The Contractor shall be knowledgeable of archiving standards
- ~ Completeness - The Contractor shall report all instances of archived product replacements to management

Monitoring Method:

Inspection of reports detailing changes to archived data.

NDE INTERFACE REQUIREMENTS

XF1: IDPS Interface

Desired Outcome:

Receipt of data and products from NPOESS Interface Data Processing Segment (IDPS)

(Note: "Data and products" refers to, at a minimum, products [including SARSAT & A-DCS], ancillary data, auxiliary data, and metadata,)

Required Service:

~ The contractor shall provide a capability for receiving data and products from IDPS.

~ The contractor shall provide a capability for determining whether the data and products ingested by NDE from IDPS are the same as the data and products that were sent.

Performance Standard:

Completeness, Reliability, Timeliness: 100% of the data sent by the IDPS is received in real time

Monitoring Method:

NESDIS inspection of Performance logs

XF2: Availability of Products

Desired Outcome:

Data is made available to customers and developers

(NOTE: "Customers" are defined in Section 2 of the NDE Project Plan.)

Required Service:

The contractor shall provide a capability for ensuring that NDE's tailored products and NOAA-unique products are made available to authorized customers and developers

Performance Standard:

Completeness, Reliability, Timeliness: 100% of the products sent are received in real time

Monitoring Method:

NESDIS inspection of Performance logs

XF3: Timeliness of Product Retrieval

Desired Outcome:

Products are made available for customer retrieval

Required Service:

The contractor shall provide a capability for ensuring that NDE's tailored products and NOAA-unique products are placed in locations from which they can be retrieved by customers in real time

Performance Standard:

Reliability: 100% of the products placed for retrieval can be extracted

Monitoring Method:

NESDIS inspection of Performance logs

XF4: Developer Retrieval of Products

Desired Outcome:

Products are made available for retrieval by developers in NOAA and Cooperative Institutes

Required Service:

The contractor shall provide a capability for ensuring that NDE's tailored products and NOAA-unique products are placed in locations from which they can be retrieved by developers

Performance Standard:

Reliability: 100% of the products placed for retrieval can be extracted

Monitoring Method:

NESDIS inspection of Performance logs

XF5: Transmission of Products to (CLASS)

Desired Outcome:

Transmission of product to Comprehensive Large Array-data Stewardship System (CLASS)

Required Service:

The contractor shall send NDE's NOAA-unique products to CLASS.

Performance Standard:

Completeness, Reliability, Timeliness: 100% of the data sent to CLASS is received in real time

Monitoring Method:

NESDIS inspection of Performance logs

XF6: Transmission of System Components to CLASS**Desired Outcome:**

Transmission of system components to Comprehensive Large Array-data Stewardship System (CLASS)
(**NOTE:** "System elements" is inclusive of all system objects invoked to create or tailor a product, including, but not limited to, time-stamped source code, time-stamped control tables such as those containing the actual correlation coefficients used for processing, and any associated time-stamped documentation.)

Required Service:

The contractor shall send NDE elements (Source Code, Utilities, Algorithms, Control Tables, etc.) to CLASS.

Performance Standard:

Completeness, Reliability, Timeliness: 100% of the system elements sent to CLASS are received in real time

Monitoring Method:

NESDIS inspection of Performance logs

XF7: Receipt of Products from CLASS**Desired Outcome:**

Receipt of products from Comprehensive Large Array-data Stewardship System (CLASS)

Required Service:

The contractor shall receive xDRs and NOAA-unique products from CLASS.

Performance Standard:

Completeness, Reliability, Timeliness: 100% of the data sent by CLASS is received in real time

Monitoring Method:

NESDIS inspection of Performance logs

XF8: Receipt of Elements from CLASS**Desired Outcome:**

Receipt of system elements from Comprehensive Large Array-data Stewardship System (CLASS)

Required Service:

The contractor shall receive NDE elements from CLASS

Performance Standard:

Completeness, Reliability, Timeliness: 100% of the system elements sent by CLASS are received in real time

Monitoring Method:

NESDIS inspection of Performance logs

XF9: Interface to the MMC**Desired Outcome:**

Interface to the NPOESS Mission Management Center (MMC)

Required Service:

The contractor shall provide an interface for NDE to the MMC

Performance Standard:**Completeness, Reliability, Timeliness:**

~100% of the inquiries to the MMC and replies to MMC requests are received by the MMC in real time

~100% of the notifications and inquiries from the MMC are received by the MMC in real time

Monitoring Method:

NESDIS inspection of Performance logs

XF10: Service Requests to the IPO

Desired Outcome:

Interface with the IPO's Service Request System

Required Service:

The contractor shall provide an interface for NDE Service Requests to the IPO

Performance Standard:

Completeness, Reliability, Timeliness:

~ 100% of the NDE Service Requests intended for the IPO's attention are delivered to the IPO

~ 100% of the IPO's responses to the NDE Service Requests intended for the IPO's attention are received by the contractor

Monitoring Method:

NESDIS evaluation of regular status reports

XF11: Communicate With The Idps Operations

Desired Outcome:

Interface with NPOESS' IDPS operations

Required Service:

The contractor shall provide an interface for ESPC's operations to communicate with the IDPS operations

Performance Standard:

Completeness, Reliability, Timeliness:

~ 100% of the NDE communications intended for the IDPS operator's attention are delivered to IDPS operations

~ 100% of the IDPS operator's responses to the NDE communications are received by the contractor

Monitoring Method:

NESDIS evaluation of regular status reports

XF12: Service Requests (Srs) For Formatted Products

Desired Outcome:

Customers and developers receive products in a desired format.

Required Service:

The contractor shall provide a capability for receiving NDE *Service Requests* (SRs) for formatted products from customers.

Performance Standard:

- ~ Availability 24 X 7
- ~ Ease of Customer Use TBD
- ~ Ease of Operator Use TBD

Monitoring Method:

NOAA inspection

XF13: Requests For Tools**Desired Outcome:**

Customers and developers obtain tools to reformat products on their systems.

Required Service:

The contractor shall provide a capability to respond to NDE service requests for tools to reformat products with *Service Responses*.

Performance Standard:

- ~ Ease of Customer Use TBD
- ~ Ease of Operator Use TBD

Monitoring Method:

Analysis of automated Help System Reports

OPERATIONAL PRODUCT GENERATION REQUIREMENTS

PG1: Product Format

Desired Outcome:

The customer receives products in a desired format.

Required Service:

Product Format Requirement:

The contractor shall provide and implement software to reformat the HDF5 data records received from the Interface data Processing Segment (IDPS) into customer-specified formats. The requirement applies to both tailored and NOAA-unique NDE environmental satellite data products. Anticipated formats include, but are not limited to, the following: BUFR, GRIB, FF, GIF, GeoTIF, McIDAS, HDF, SARAD, SATEM, NetCDF.

Performance Standard:

Accuracy & Completeness - Reformatted Products must have identical content to the HDF5 versions received from the IDPS

Monitoring Method:

- ~ NESDIS Inspection of Products
 - ~ Customer Satisfaction Surveys
-

PG2: HDF5 Data Conversion Tools

Desired Outcome:

The customer obtains tools to reformat products on his system.

Required Service:

HDF5 Data Conversion Tools Requirement:

The contractor shall make available, for use at customer sites, software that will convert the HDF5-format NPOESS xDRs into one of several, specified (tbd) formats.

Performance Standard:

System Compatibility - Data Conversion tools must be capable of execution by customers using "standard" operating systems (e.g., LINUX, AIX,) and telecommunications (e.g., FTP, Internet, API).

Accuracy & Completeness - The products reformatted with the NOAA-supplied data conversion tools must have identical content to the HDF5 versions received from the IDPS

Monitoring Method:

- ~ NESDIS Inspection of Products
 - ~ Customer Satisfaction Surveys
-

PG3: Lossless Product Compression**Desired Outcome:**

The products are received by customers in a compressed state.

Required Service:**Lossless Product Compression Requirement:**

The contractor shall provide and implement software to compress both tailored and NOAA-unique NDE environmental satellite data products, using customer specified compression formats. Anticipated compression formats include, but are not limited to, the following: GZIP, ZIP.

Performance Standard:

Accuracy & Completeness - De-compressed product must have identical content to the pre-compressed versions.

Monitoring Method:

- ~ NESDIS Inspection of Products
 - ~ Customer Satisfaction Surveys
-

PG4: Lossy Product Compression**Desired Outcome:**

The products are received by customers in a compressed state.

Required Service:**Requirement:**

The contractor shall provide and implement software to compress both tailored and NOAA-unique NDE environmental satellite data products, using customer specified, lossy compression formats. Anticipated compression formats include, but are not limited to, the following: RICE, JPEG.

Performance Standard:

Accuracy & Completeness - De-compressed product must have acceptably similar content (tbd) to the pre-compressed versions.

Monitoring Method:

- ~ NESDIS Inspection of Products
- ~ Customer Satisfaction Surveys

PG5: Product Projection Tailoring

Desired Outcome:

The customer obtains different projection views of the same product

Required Service:

Product Projection Requirement:

The contractor shall provide and implement software to allow customers to choose specified (tbd), alternative projection views (i.e., platecarre, Mercator, polar stereographic) of both tailored and NOAA-unique NDE environmental satellite data products

Performance Standard:

Accuracy & Completeness - Products that have been repackaged using projection views (i.e., mercator, polar projection, etc.) other than those of the original product received from the IDPS must contain the same information as the original, IDPS versions of the products.

Quality: Projection views provided must conform to standard projection specifications

Monitoring Method:

- ~ NESDIS Inspection of Products
 - ~ Customer Satisfaction Surveys
-

PG6: Product Frequency (Aggregation) Tailoring

Desired Outcome:

The customer receives aggregated products in different frequency ranges

Required Service:

Product Frequency Requirement:

The contractor shall provide and implement software to deliver both tailored and NOAA-unique NDE environmental satellite data products at the frequency specified by customers. Anticipated frequencies include, but are not limited to, the following: Daily, weekly, orbital, etc.(tbd).

Performance Standard:

Accuracy & Completeness - Aggregated products must accurately represent the separate elements from which the product was assembled.

Monitoring Method:

- ~ NESDIS Inspection of Products (Comparison of the separate components with the aggregated product)
 - ~ Customer Satisfaction Surveys
-

PG7: Product Grid Spacing Tailoring**Desired Outcome:**

The customer has a choice of the grid spacing of product

Required Service:**Product Grid Spacing Requirement:**

The contractor shall provide and implement software to deliver both tailored and NOAA-unique NDE environmental satellite data products with specified (tbd) grid spacing .

Performance Standard:

Accuracy & Completeness - Re-gridded products must contain no less data than the IDPS-supplied products from which they were derived unless the end-user formally agrees to lower resolution

Monitoring Method:

- ~ NESDIS Inspection of Products
 - ~ Customer Satisfaction Surveys
-

PG8: NOAA-unique Product Generation**Desired Outcome:**

The customer receives NOAA-unique products.

Required Service:**NOAA-unique Product Generation Requirement:**

The contractor shall provide and implement software to augment the data records received from the Interface Data Processing Segment (IDPS) to generate NOAA-unique environmental satellite data products through application of NOAA-supplied algorithms and utilization of NOAA-supplied data.

Performance Standard:

Accuracy & Completeness - Each NOAA-unique product will be described in terms of explicit, expected test results prior to the installation of the NOAA-supplied algorithm on the product generation system. The NOAA-unique products must satisfy these test requirements.

Monitoring Method:

- ~ NESDIS Inspection of Products
 - ~ NESDIS Inspection of NOAA-unique product specifications that include test criteria and test specifications
 - ~ NESDIS Inspection of Test Results
 - ~ Customer Satisfaction Surveys
-

PG9: Ancillary Data Acquisition**Desired Outcome:**

NDE acquires ancillary data from external sources

Required Service:**Ancillary Acquisition Requirement:**

The contractor shall retrieve control information necessary for product generation from sources such as NCEP, NAVOCEANO, METOPS, and other external systems.

Performance Standard:

- ~ **Completeness:** 100% of the ancillary data required for product generation will be acquired
- ~ **Reliability:** The ancillary data products obtained can be effectively applied in product generation algorithms

Monitoring Method:

- ~ **Completeness:** ~NESDIS inspection of Production logs
 - ~ **Quality:** NESDIS analysis of product accuracy
-

PG10: Ancillary Data Quality**Desired Outcome:**

The ancillary data delivered to NPOESS is the same as the ancillary data used by NESDIS

Required Service:**Ancillary Data Quality Requirement:**

The contractor shall review and certify Ancillary Data

Performance Standard:

- ~ **Completeness:** 100% of the ancillary data requested by NPOESS will be distributed to NPOESS

~ **Reliability:** The ancillary data products provided can be effectively applied in product generation algorithms

Monitoring Method:

~ **Completeness:** ~NESDIS inspection of Production logs

~ **Reliability:** NESDIS comparison of IDPS products and algorithms with NPOESS products and algorithms

PG11: Enhancement Request Procedure

Desired Outcome:

Customers will request product enhancements

Required Service:

Product Enhancement Requirement: The contractor shall provide procedures for capturing the requirements for product enhancement requests

Performance Standard:

Customer Satisfaction: 90% of customers surveyed report that they were pleased with the procedures for defining their product enhancement requirements

Monitoring Method:

Customer Satisfaction Surveys

COMMUNICATIONS & DISTRIBUTION REQUIREMENTS

CD1: Delivery Timeliness

Desired Outcome:

Customers (e.g., NOAA operational users) obtain NPOESS-based products

Required Service:

Product Delivery Timeliness Requirement: The contractor shall develop and implement procedures to make products available to customers.

Performance Standard:

~ Availability:

Products will be made available to customers within one minute of their receipt from the NESDIS product processing system

Monitoring Method:

~ NOAA Inspection of Daily, Weekly, and Monthly Product Distribution Logs

CD2: Bandwidth

Desired Outcome:

External development organizations exchange very large (TBD), experimental datasets with NOAA.

Required Service:

The contractor shall provide communication pathways with sufficient bandwidth to allow the exchange of large (TBD), experimental datasets and products between the ESPC and external NOAA development partners such as the Cooperative Institutes.

Performance Standard:

~ Throughput: >4 (tbc) GB/s

Monitoring Method:

~ Demonstration

~ Analysis of System test logs recording the results of scenarios designed to determine maximum throughput between ESPC and non-NOAA development partners

~ Analysis of Performance Logs

CD3: Product Delivery Cost

Desired Outcome:

Customers obtain NPOESS-based products

Required Service:

Product Delivery Cost Requirement: The contractor shall develop and implement procedures to distribute products to customers at the optimal cost for performance desired.

Performance Standard:

~ Cost

Monitoring Method:

~ NOAA will monitor/review contract cost as described in the required trade study (i.e., Data Distribution Study Task) every three years

CD4: Product Delivery Security

Desired Outcome:

The NDE network can be accessed only with the authorization of ESPC

Required Service:

Product Delivery Security Requirement: The contractor shall develop and implement procedures to distribute products to customers ensuring compliance to DOC/NOAA security and data integrity policies.

Performance Standard:

Security: The Contractor shall provide to NESDIS a trade study for the choice of the proposed technology.

Monitoring Method:

NOAA's inspection of security standards imposed by the contractor.

CD5: Product Delivery Design

Desired Outcome:

NDE adopts an architecture that addresses NPOESS-based product distribution to customers.

Required Service:

Product Delivery Design Requirement: The contractor shall undertake a trade study and report on the costs and benefits of implementing feasible product communication schemes and communication infrastructure alternatives. Among other ideas, the study must encompass providing Points of Presence (POPs) at each of the following customer sites to receive products transmitted from the NOAA Central at the NSOF:

- \ NESDIS, to Suitland's NSOF
- \ SARSAT, to Suitland's NSOF
- \ NWS to a customer-designated POP
- \ OAR to a customer-designated POP
- \ NMAO to a customer-designated POP
- \ NOS to a customer-designated POP
- \ NMFS to a customer-designated POP
- \ NOAR to a customer-designated POP
- \ Academic/Universities Suitland to customer-designated POP(s)
- \ International/EUMETSAT to a customer-designated POP

Performance Standard:**~ Availability:**

Over the course of each calendar year, the NPOESS-derived product distribution capability at NSOF will be operational more than 99% (tbc) of the time each month.

Monitoring Method:

~ Prior to selection, the contractor shall propose a networking infrastructure study plan to meet requirements.

CD6: Product Delivery**Desired Outcome:**

Customers obtain NPOESS-based products

Required Service:**Product Delivery Performance Requirement:**

The contractor shall develop and implement procedures to make NPOESS-based products available to customers.

Performance Standard:**~ Availability:**

Over the course of each calendar year, the NPOESS-derived product distribution capability at NSOF will be operational more than 99% (tbc) of the time each month.

Monitoring Method:

NOAA Inspection of Daily, Weekly, and Monthly Product Distribution Logs

CD7: SARSAT**Desired Outcome:**

USMCC receives SARSAT telemetry captured by NPOESS satellites

Required Service:

SARSAT Requirement: The contractor shall distribute SARSAT telemetry from IDPS to USMCC.

Performance Standard:

Timeliness: SARSAT Telemetry captured by NPOESS satellites will be distributed to USMCC within thirty seconds of their receipt by NESDIS.

Monitoring Method:

~ Prior to selection, the contractor shall propose a networking infrastructure plan to meet requirements.

~ NOAA Inspection of Daily, Weekly, and Monthly SARSAT Product Distribution Logs

CD8: ADCS**Desired Outcome:**

The US Global Positioning Center receives ADCS data and telemetry captured by NPOESS satellites.

Required Service:**ADCS Requirement:**

The contractor shall route ADCS Data from IDPS to the US Global Processing Center.

Performance Standard:**~ Timeliness:**

ADCS signals captured by NPOESS satellites will be distributed to the US Global Processing Center within thirty seconds of their receipt by NESDIS

Monitoring Method:

~ Prior to selection, the contractor shall propose a networking infrastructure plan to meet requirements.

~ NOAA Inspection of Daily, Weekly, and Monthly ADCS Product Distribution Logs

CD9: Timeliness

Desired Outcome:

The customer receives products in a timely manner

Required Service:

Product Processing Timeliness Requirement: The contractor shall deliver NPOESS-derived products to customers as quickly as possible.

Performance Standard:

Timeliness: No more than five minutes will elapse from the point-in-time when all of the required xDRs needed to create or to tailor a product are received from the IDPS and the point-in-time when the tailored or NOAA-unique product is made available for distribution to customers

Monitoring Method:

- ~ NESDIS Inspection of Production Logs
 - ~ Customer Satisfaction Surveys
-